

Impact of Using Audio-Visual Aids in Online Teaching-Learning System

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Abstract

An online teaching learning system is a digital-based technology for virtual classes by using computer-type appliances. Digital-based Audio-Visual (A-V) aid is considered an effective tool for online teaching learning system as it stimulates, motivates, and focuses learners' attention during the instructional process. This research explored the opinions and experiences of both teachers and students on the effective use of A-V aids in online teaching learning classes, based on their online teaching-learning practices, in an Academic Institution in Nepal from June to December 2020. Google survey forms (Online) were made available to all the teachers and students from different programs/faculties at Himalaya College of Engineering, affiliated to Tribhuvan University, Nepal. The collected data from the survey were analyzed by using basic statistical tools and the data was presented the results graphically. The study showed that the majority of the teachers and students have positive perceptions on their impact of using A- V aids, however, the range of agreement was varied based on different course contents, faculties and perceptions of the respondents.

Keywords

Online classes, audio-visual aids, level of agreement, quality education delivery

1. INTRODUCTION

1.1 Background

An online or virtual learning is a system that creates an environment designed to facilitate teachers' management of educational courses for their students, especially by using computer appliances [1]. It is obvious that quality of education depends on effective teaching-learning pedagogy where the effectiveness of class depends on many factors like use of quality technology, content, delivery capacity of the teachers, and participation and level of understanding of the students. Use of appropriate teaching learning apps like Zoom, Microsoft Teams, and teaching learning materials or A-V aids like Power point, Digital notes, Video clips, Google sites, You-tube channels is an important

factor for effective teaching- learning pedagogy [2]. A research showed that on an average, students retain 25-60% more when learning online compared to only 8-10% in a classroom (Forum 2020). This might be due to the increased ability of students to grab the matters faster while using A-V aids. However, quality of A-V aids including many other factors like – network capacity, electricity supply, quality of materials, presentation skill, confidence level of teachers determined the quality of online classes.

The recent COVID-19 pandemic had resulted in schools and universities being shut down all across the world, so the education delivery mechanism had been changed dramatically from the physical traditional method to virtual classes by using digital platforms. Most of the academic institutions in Nepal also had been experiencing

an online virtual teaching system ever since the pandemic arose. While getting access to the right technology, learning online can be more effective in several ways [3]. Online teaching systems may never totally replace the traditional experience; however, it is also undeniable that the technology-based online teaching-learning mechanism provides a major impact compared to traditional lessons even in the way of pursuing formal education in a new normal situation.

Many studies have been done about the impact of A-V aids in virtual teaching methods [2], [4], [5], and all suggested that audio-visual aids are considered as important teaching-learning material. However, none of the studies have been done yet by combining both teachers' and students' experiences context-wise, faculty wise and by considering all those influencing factors together. Hence, this study aimed to fulfill those knowledge gaps in the area based on the range of agreement data retained from the respondents.

1.2 Objectives

The main objective of this study was to identify the effective use of A-V aids in online teaching-learning systems both from teachers' and students' experiences. This study assessed the level of agreement and experiences of teachers and students from different faculties and in different contexts.

1.3 Conceptual Framework

The A-V Aids represents the independent variable while quality delivery with an effective & efficient teaching-learning process acts as the dependent variable. The hypothesis set as: 'Visual aids have a positive and significant relation with enhancing the learning process.

Besides the defined curriculum, the effectiveness of online classes is determined by many factors where the motivation of students for learning is also important (Figure 1).

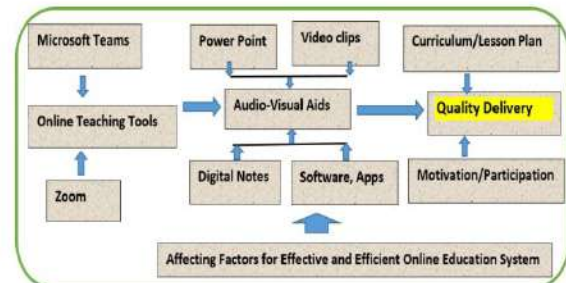


Figure 1: Conceptual framework of the study

2. LITERATURE REVIEW

Learning is a complex process as it happens as an outcome of afresh attained skills, principles, perception, knowledge, facts, and new information at hand [6]. It can be reinforced with different teaching/learning resources because they stimulate, motivate as well as focus learners' attention for a while during the instructional process [5]. A virtual learning environment, which is also known as a 'Learning Management System' in North America is a system that creates an environment designed to facilitate teachers' management of educational courses for their students, by using computer appliances. For the first time, Starr Roxanne Hiltz [7] in 1986 describes 'Virtual Classroom' as a 'Computer-Mediated Communication system for University Education system' and came into practice in a progressive manner. The material like models, charts, film strips, projectors, radio, television, maps etc. are called instructional aids which are used in the classroom to encourage learning and make it easier and more motivating [8].

The use of visual aids in the teaching-learning process has multifarious values [9] as 'visual aids

need to stimulate and cognize thinking [10]. Likewise, visual aids give chance speakers to make a more professional and consistent performance. Visual aids are those devices that are used in classrooms to encourage students learning process and make it easier and more interesting. Visual aids are the best tool for making teaching effective and the best dissemination of knowledge. Audio-Visual (A-V) aids are the best tool for making teaching effective and the best dissemination of knowledge [2] and [5], and level of motivation [3].

Moreover, 'A-V aids are those instructional devices that are used in the classroom to encourage learning and make teaching-learning process more effective, easier, and interesting [2]. According to Burton "Visual aids are those sensory objects or images which initiate or stimulate and support learning". Kinder, S. James; describes visual aids as "Visual aids are any devices which can be used to make the learning experience more real, more accurate and more active".

There is a famous Chinese proverb "one seeing or sight is worth a hundred words" which means that - if we hear we forget if we see we remember, and if we do something we know it" which means that use of A.V aids [2]. Another study showed that e-learning requires 40-60% less time to learn than in a traditional classroom setting because students can learn at their own pace, going back and re-reading, skipping, or accelerating through concepts as they choose [11]. Nevertheless, the effectiveness of online learning varies amount age groups. A study showed that people generally remember 10% of what they *read*, 20% of what they *hear*, 30% of what they *see*, 50% of what

they *hear* and *see*, 70% of what they *say*, and 90% of what they *say* as they *do* a thing [5]. So, there is no doubt that technical devices have a greater impact and dynamic informative systems. Likewise, research [12] indicated the psychology of visual aids as under, 1% of what is learned is from the sense of *taste*, 1.5% of what is learned is from the sense of *touch*, 3.5% of what is learned is from the logic of *smell*, 11% of what is educated is from the logic of *hearing* and 83% of what is learned is from the sense of *sight*.

However, it is very important to maintain the quality of A-V Aids while using it [13]. Visual aids must be visible to the whole class; tapes of speeches and sounds should be confirmed for correct volume and quality in the actual environment in which they will be used [14]. All calligraphy and illustration must be large and adequate to be seen easily by the students farthest from the aids', and colors should provide clear contrast and easily be visible. [5]. Using A.V aids in teaching, on the one hand, enhance teachers' lesson plans and give students additional ways to process subject information as they supplement the work of the teacher and help in the study of the textbooks", and they concretize the knowledge, on the other hand, to be presented and help in making learning experience apple real, living and vital [2].

Taking the perception of both teachers and students as respondents is necessary for this study. The role of teachers in effective teaching is important as integrating technology into the classroom as a teacher prepares lessons that use technology in meaningful and relevant ways. Technological aids should support the curriculum rather than dominate it. Technology should assist

the teacher in creating a collaborative learning environment [4] as [14] says that the integration of technology into the curriculum means using it as a tool to teach academic subjects and to promote higher-order thinking skills of the students. Nevertheless, there are challenges to online teaching-learning systems mainly some students without reliable internet access and/or technology struggle to participate in digital learning. To get the full benefit of online learning, there needs to be a concerted effort to manage all facilities effectively.

3. METHODOLOGY

3.1 Sampling

In this research, purposive sampling techniques were used for the collection of information from the particular individuals who had the specific knowledge as such type of knowledge has been required for quantitative research. The targeted population for this research is the teachers and students of Himalaya College of Engineering, affiliated with Tribhuvan University, Nepal. Online Google Survey forms with MCQs were made available for data collection. In total 17 teachers and 170 students (in 1:10 ratio) altogether from Civil Engineering, Architecture, Computer & Electronics, and CSIT faculties did attempt the survey. The answers to the questions were based on respondents' experiences in online teaching learning classes from June to November 2020.

3.2 Working Approach

A different set of Google survey forms with MCQs were provided for teachers and students to assess the variances of views and use of visual aids between teachers and students from different

groups and faculties. A mixed method approach was adopted for this research (Figure 2).

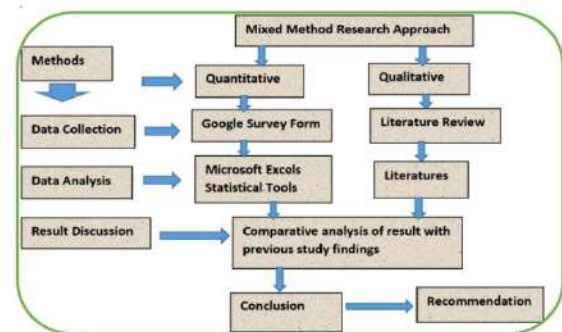


Figure 2: Study approach

3.3 Data Collection

The required data for the analysis were collected as answers to survey questions.

3.4 Data Analysis

Microsoft Excel and Statistical tools were used for simple statistical analysis. Bar chart, Pie chart, and previous research findings were used for result presentation and discussion.

4. RESULTS

4.1 Teachers' Responses in Survey

The result (Table 1) showed that 100% of the respondent teachers agreed on the fact that A-V aids increase students' level of understanding; improve quality delivery; presentation skills; teachers' hardship, time and effort as the materials can be used in Multi-places and times.

Table 1: Teachers' responses

		Teachers' Responses						
SN	Questions to Teachers	Disagreed	Agreed					
			0	1	2	3	4	5
1	Increase teachers' confident level	1	0	1	6	5	4	
2	Required less memory capacity (as most of the matters are well included in the material)	3	1	2	2	7	2	
3	Level of students' active participation in classes	1	3	5	3	4	1	
4	Students' level of understanding (that is known from the discussion at the end of the session)	0	0	0	6	8	3	
5	Quality delivery of message	0	0	1	4	10	2	
6	Presenter's presentation skills	0	0	3	1	10	3	
7	Teachers' hardship- more time and effort consuming	0	0	0	1	6	10	
8	Heslie in management	2	1	1	0	9	4	
9	Can use same material in multi-places and times	0	2	1	3	5	6	
10	Problem during electricity cut off and poor internet connection	1	0	0	2	6	8	
11	Concern about copy-right and plagiarism issues	2	1	1	2	3	8	

4.2 Students' Responses in the Survey

The result in Table 2 showed only 67% of the respondent students agreed with the fact that A-V aids increase students' level of understanding. However, 75% of the respondents agreed that the use of A-V aids increases: a) level of concentration in class; and b) increase students' presentation skills and confidence in expressing what they learn. Only 71% of the students agreed that it increases student's confidence level, while more than 90% of the students agreed that A-V aids were not effective during the electricity cut-off and poor internet connection.

Table 2: Students' responses

SN	Questions to Student	Disagree						Agree					
		0	1	2	3	4	5	0	1	2	3	4	5
1	Increase students' confidence level	49	40	35	33	11	2						
2	We are able to concentrate in class	42	45	36	30	13	4						
3	Level of understanding has increased	56	42	33	25	13	1						
4	Problem during electricity cut off and poor internet connection	14	11	14	19	31	81						
5	Students presentation increased level of understanding and to express what student learned	43	27	47	31	16	6						

4.3 Teachers' Perception of the Effective Use of A-V Aids

The results showed that all of the teacher respondents fully agreed (i.e., 0% disagreed) on the fact that the use of A-V aids influences on teaching quality as it: (a) increases teachers' confidence level; (b) requires less memory capacity; and (c) increase students' active participation during classes. Maximum 37% of the teachers' respondents showed their agreed level up to 60% in case (a); 50% of the students showed their agreed level up to 80 % in case (b); and 31 % showed their agreed level up to 40% in case (c) condition mentioned above.

However, there are some negative aspects that affect quality delivery while using A-V aids such

as (i) Hassle in management; and (ii) Problems during electricity cut-off and poor internet connection. A maximum of 60% of the total respondents showed their agreed level up to 80% in case former case and 50% showed their agreed level up to 100% in the latter case. Moreover, plagiarism and copyright issues are also a matter of consideration for effective use of A-V aids where 7 to 53 % of total respondents showed their agreed level from 20 to 100% respectively (Figure 3).

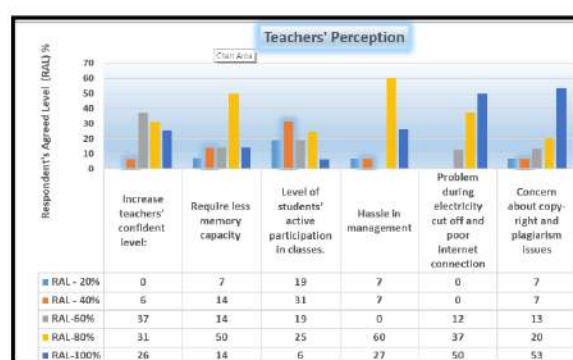


Figure 3: Teachers' perception

4.4 Faculty-wise Teachers' Responses

Faculty-wise teachers' responses results (Figure 4) showed that 11% of the total student respondents from BCE, 14% from BCT, 13% from BEX, 14% from BArch, 20% from CSIT, and 50% from BCA faculty *did not* agree on the fact that the use of A-V aids increases teachers confidence level. This showed that the level of disagreed percentage from BCE to CSIT is in the 10 - 20% range while for BCA is up to 50%. Likewise, none of the teachers *disagreed* (i.e., 100% *agreed*) with BArch and BCA. for the fact that the use of A-V aids in teaching impact on classes during electricity cut-off and an internet connection, and Hassle in management was 100% *agreed* by BCT, BArch, and BCA. Similarly,

Copyright and plagiarism issues were *agreed upon* by 100% of the respondents from BCT, BEX, and BCA. Overall, 22% of the total respondent students in BCA (double than other cases) *disagreed* that teachers required less memory capacity to use A-V aids in virtual classes than in the traditional system.

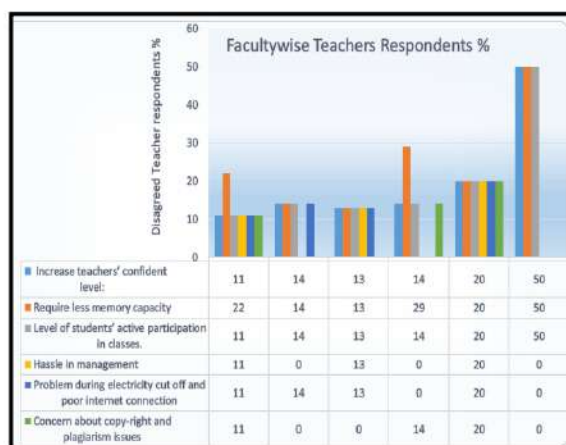


Figure 4: Faculty-wise Teachers' Responses

4.5 Students' Perception

The use of A-V aids affect on learning process through many aspects, mainly by increasing their degree of confidence; concentration; understanding; presentation skills; and confidence in expression what they learn. However, the cons of using A-V aids in a virtual teaching-learning system are that students face problems during electricity cut-off and poor internet connection.

The study results also (Figure 5) showed that 7 to 37% of the total student respondents showed their agreed level up to 80%, and 1 to 52% of the total respondents showed their agreed level up to 100% for the positive benefits of using A-V aids. Similarly, 1 to 34% of total respondents agreed on the fact that A-V aids increase students' confidence level; 3 to 35% of total respondents

agreed for an increased level of concentration in class, 1 to 37% of total respondents agreed for an increased level of understanding; and 6 to 37% of total respondents agreed for increased presentation skill and confidence in expression. However, 7 to 52% of total respondents with 100% agreed level (RAL) mentioned that there is a problem to use A-V aids during electricity cut-off and poor internet connection problems.

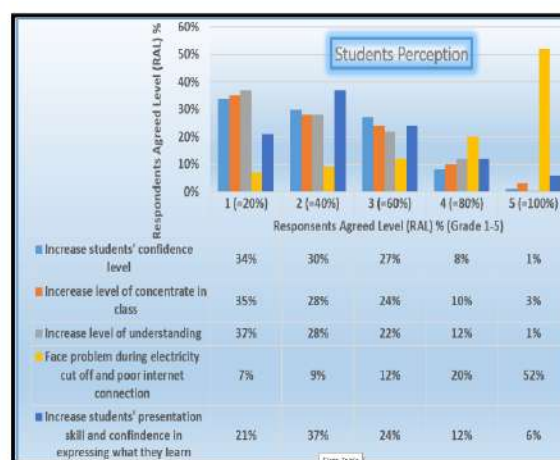


Figure 5: Students' Perception

4.6 Faculty-wise Students' Perception

Results as in Figure 6 showed that 33% of the total students from BCE, 27% from BCT, 32% from BEX, and 16% from BArch *did not agree* with the fact that the use of A-V aids increase students' confidence level. It is clearly seen that percentage of disagreed students from BCE is more than double that from BArch but the results from BCT and BEX are almost in a similar range. similarly, 27% of total students from BCE, 23% from BCT, 21% from BEX, and 24% from BArch *did not agree* with the fact that the use of A-V aids increases students' level of concentration in class, where the percentage of disagreed students are more than 20% in all cases. Likewise, the largest percentage of students, ranging from

21 to 42%, *disagreed* with the fact that the use of A-V aids increases students' level of understanding. in the same way, the maximum percentage of students (31%) from BCE and the minimum percentage of students (12%) from BArch *did not agree* that the use of A-V aids increases students' presentation skills and confidence.

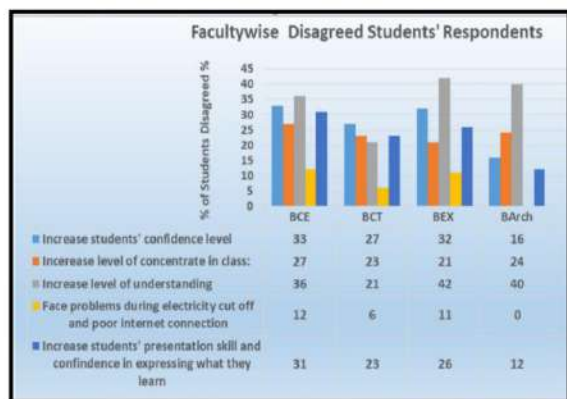


Figure 6: Faculty-wise students' perception

On contrary, none of the students from BArch disagreed (that means 100% of the students *agreed*) that electricity cut-off and poor internet connection create problems in online class while using A-V aids.

5. DISCUSSIONS

Most of the findings of this study are supported by the results of earlier studies. For example, according to [2], most of the students agreed that the use of A.V aids is more effective in the learning process at the university level. Likewise, as per [5] 70% of the students and teachers agree that the visual aids help in motivation and 75% of the students and teachers agree that the visual aids help in clarification of contents under research. Another study showed that 92.6% of the students agreed that they understand more effectively with the use of audio-visual aids [15]. This might be

because students pay more attention to visual classes while they see and hear properly.

Supporting the findings of this study, a study on 'The use of PowerPoint Presentations at the Department of Foreign Language Education in the Middle-East' [16] concluded that students learned better if the course material was presented through some visual tools. They also reported that teachers believed that PowerPoint presentations made the content more appealing; therefore, they helped them take students' attention. The results of [17] showed that students exposed to PowerPoint presentations preferred more than the textbook presentations. Similarly, [18] reported a number of benefits including increased motivation, improvement in self-concept and mastery of basic skills, more student-centered learning, and engagement in the learning process. [19] from his 17 social studies concluded that teachers held a variety of views towards technology integration.

6. CONCLUSION

The outcome of the above discussion suggests that the appropriate use of AV aids is useful to students as well as teachers. The result of this study supported the hypothesis: 'The use of A.V aids is important for effective teaching-learning processes' as it motivates both the teachers and students to bring changes in the classroom environment through many influencing factors associated together.

However, the common effort of students, teachers, parents, management team, and the government in the case of public institutions is required to adopt the appropriate technology. Teachers' interest-based training programs

should be designed in a way to promote the use of aids in the classroom. The support from parents, management, and the government should be provided to initiations to manage the fund. Teachers should get feedback from students on whether AV aid used has a positive impact on their learning or not. Examining students' results is also a way of evaluating the learning outcomes. Aids used must be able to attract the involvement, participation, and discussion among students in the classroom so that they would be able to relate the aid with the subject matter. Parents who are also aware of the importance of aids in teaching should convince other parents and teachers as well so that their children could attain a quality education.

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